CONTENTS

List of committees ix

Conference photograph x

Preface xi

1. Development of the nuclear shell model

Evolution of the nuclear shell model
A. Arima 1c

Towards the future of the nuclear shell model
B.A. Brown 11c

Tokyo-RIKEN shell model project
T. Otsuka 21c

2. Shell model for unstable nuclei

Nuclear spectroscopy on unstable nuclei at RIKEN
H. Sakurai 27c

Structure of neutron-rich nuclei around $N = 20$, 28 and 40 from in-beam γ-spectroscopy
F. Azaiez 37c

Monte Carlo shell model calculation for unstable nuclei around $N = 20$
Y. Utsuno, T. Otsuka, T. Mizusaki and M. Honma 50c

3. New aspects in the shell model

Frontier of shell model calculations
E. Caurier and G. Martínez-Pinedo 60c

Multiphonon mixed-symmetry states accessible to the shell model
N. Pietralla, C. Fransen, A. Lisetskiy and P. von Brentano 69c

4. Light exotic nuclei and their moments

Shell structure of Be and Li isotopes studied by electroweak probes
T. Suzuki and T. Otsuka 79c

Electromagnetic moments of neutron-rich nuclei measured with polarized radioactive ion beams
K. Asahi, K. Sakai, H. Ogawa, H. Miyoshi, K. Yogo, A. Goto, T. Suga, H. Ueno, Y. Kobayashi, A. Yoshimi, A. Yoshida, T. Kubo, Y.X. Watanabe, H. Imai, K. Yoneda, N. Fukuda, N. Aoi, M. Ishihara, W.-D. Schmidt-Ott, G. Neyens and S. Teughels 88c

Recent studies on the nuclear moments of light mirror nuclei ($T = 1/2, 3/2$)
K. Matsuta, T. Minamisono, M. Fukuda, M. Mihara, K. Sato, K. Minamisono, T. Yamaguchi, T. Onishi, T. Miyake, M. Sasaki, M. Tanigaki, T. Ohtsubo, S. Momota, Y. Nojiri, K. Yoshida, A. Ozawa, I. Tanihata, A. Kitagawa, M. Torikoshi, M. Kanazawa, S. Koda, T. Nishio, M. Suda, J.R. Alonso, G.F. Krebs, T.J.M. Symons, S.S. Hanna and other Osaka-RIKEN-HIMAC-LBL Collaboration members 98c

5. New theory of effective interaction

A new theory of shell-model effective interactions
T.T.S. Kuo, S. Bogner and L. Coraggio 107c

6. Structure of pf-shell nuclei

Low spin structure of odd–odd $N = Z$ nuclei ^{54}Co and ^{50}Mn
P. von Brentano, C. Frießner, R.V. Jolos, A.F. Lisetskiy, A. Schmidt, I. Schneider, N. Pietralla, T. Sebe and T. Otsuka 115c

Nuclear properties and underlying symmetries in deformed $f_{7/2}$-shell nuclei
S.M. Lenzi 124c

Full pf-shell calculations with a new effective interaction
M. Honma, B.A. Brown, T. Mizusaki and T. Otsuka 134c

Large scale nuclear structure calculations for medium mass $N = Z$ nuclei
A. Petrovici 144c

7 . Nuclear astrophysics and the shell model

Applications of the shell model in nuclear astrophysics
K. Langanke and G. Martínez-Pinedo 154c

R-process nucleosynthesis in core-collapse supernova explosion
T. Kajino, S. Wanajo and G.J. Mathews 165c

Shell-model studies near the $N = 82$ r-process waiting point
G.J. Mathews and M.T. Ressell 179c

8. Structure of medium-heavy nuclei

Normal and superdeformation in ^{56}Ni
T. Mizusaki, T. Otsuka, M. Honma and B.A. Brown 190c

Recent beta-decay experiments on $N \sim Z$ nuclei
E. Roeckl 200c

Experimental approach towards shell structure at ^{100}Sn and ^{78}Ni
H. Grawe, M. Górska, C. Fahlander, M. Palacz, F. Nowacki, E. Caurier, J.M. Daugas, M. Lewitowicz, M. Sawicka, R. Grzywacz, K. Rykaczewski, O. Sorlin, S. Leenhardt and F. Azaiez 211c

Shell model description of correlations in ^{56}Ni and ^{100}Sn
F. Nowacki 223c

Dynamical symmetries of the shell model
P. Van Isacker 232c

Collective excitations of nuclei in the Monte-Carlo shell model
N. Shimizu, T. Otsuka, T. Mizusaki and M. Honma 244c

9. Extensions of the shell model

Large-basis no-core shell model
B.R. Barrett, P. Navratil and J.P. Vary 254c

Phases: from nuclei to quantum dots
D.J. Dean 264c

Pairing from random interactions
C.W. Johnson 276c

10. Concluding remarks

Concluding remarks
I. Talmi 287c

Conference program 291c

List of participants 295c

Author index 299c